coupled at one end to a plurality of customers and a home network serving several stations within a location. The network is coupled at the other end to head end equipment providing cable services to the cable customers. Each customer is assigned a Medium Access Control (MAC) address on the network. The head end equipment is linked to a modem management system and a router. A Broadband Multi-service Proxy Server (BMPS) having a database containing customer service information is coupled to the router. The MAC addresses of the cable customers are stored in the database. An Internet Service Provider network is coupled to the router and serves a plurality of Internet Service Providers (ISP), each ISP being linked to the Internet. In operation, the cable customers register with the ISPs of their choice. The ISPs send the customers a customer ID, password, a log on script and updates its database and the database of the BMPS with the customer information. The BMPS authorizes the customer modem and router for access to the ISP. As part of a customer's logon request, the MAC address is attached to identify the origination point of the request. The logon script sends the logon request in an extended DHCP message to the ISP via the BMPS for an Internet address. The BMPS checks the logon request against the database to verify a legitimate customer and obtains the customer profile for management and billing purposes. The BMPS sends the logon request to the requested ISP using the customer ID, password and the BMPS as the source address for any customer message. The ISP verifies the customer address again its database and updates the router address tables to accept customer messages with the new address. Normal customer ISP traffic begins. Return message to the customer are received by the BMPS which forwards the messages to the customer at their MAC address. When the customer logs off, the ISP expires the customer address, updates the router as necessary and sends a logoff message to the BMPS. The BMPS cancels the customer address, updates the router; the database and billing files as

necessary. The broadband multi-service proxy server can remain in the serial path if desired to continuously check on the validity of the packets and also count the packets for billing purposes traversing their link. Alternatively, the broadband multi-service server can be removed from the link allowing the packets to flow directly to the router and thence to the Internet through the ISP of their choice.

Page 5, paragraph 6, REPLACE as follows:

In Fig. 1 a broadband, shared link, multi-user network 10, such as a cable, satellite, radio, LAN/Wan includes a network 11 coupled to a plurality of customers 12^1, 12^2...12^n via computers 13^1, 13^2 and 13^n and an Internet Service Provider (ISP) 14 associated with the network 10. For simplicity, the broadband network 10 will be described in terms of a cable network 11 in which the customers 12^1...12^n include cable modems 16^1, 16^2.... 16^n which link the customers through a broadband cable 18 to a cable affiliated ISP server 14 (not shown). Typically, the cable modems use an Ethernet protocol for the computers 13^1, 13^2 and 13^n. The modems look like any LAN network to the computer. The computers use a frequency shift to put an Internet protocol into a given channel assignment on the cable 18. Typically, the modems 16^1, 16^2 and 16^n share the last mile of the cable to the ISP server 14 (not shown). As a result, the ISP server (not shown) cannot send responses back to the cable or broadband customers based on an individual line or port connection point as in the case of a dial-in modem connection to the Internet. In the latter case, an ISP attaches the user to an authentication server, typically a Remote Authentication Dial in User Services (RADIUS) server which is a software-based security authentication protocol developed by the International Engineering Task force (IETF) RADIUS Working Group and available from a number of suppliers including Microsoft,

Redmond, Washington. RADIUS provides access to all Internet services using one username and password. If the authentication is correct, the customer is assigned a temporary IP address from the ISP's pool of available addresses using a protocol called Dynamic Host connection Protocol (DHCP). DHCP provides a mechanism through which computers using Transaction Control Protocol/Internet Protocol (TCP/IP) can obtain protocol configuration parameters automatically through the network. The most important configuration parameter is an IP address carried by DHCP and assigned to a computer from a pool of IP addressees managed by DHCP. DHCP is an open standard, developed by the Dynamic Host Configuration working group (DHC WG) of the Internet Engineering Task force (IETF).

IN THE CLAIMS:

Please REPLACE the claims as follows:

(Amended) A broadband Internet Protocol (IP) based network, comprising:

at least one customer coupled to the network via a broadband multi service proxy server (BMPS) including a database and a router;

means for registering the at least one customer with a selected Internet Service Provider (ISP) for all IP services, prior to receiving the services;

means responsive to the registration for storing in the database a customer identification, ID and password;

means for generating a DHCP message including an extended portion identifying the selected ISP in a customer request for all IP services with the selected Internet Services Provider (ISP);